positioned on a plant of the crop and whereas the crop is unharvested, and

(b)     analyzing said data collected over said predetermined portion of the growth cycle to thereby identify a trend in said data over at least a portion of said growth cycle, said trend being indicative of the state of the crop.

2.     (Amended) The method of claim 1, further comprising the step of correlating said trend to an additional trend derived from data pertaining to an additional plant derived parameter collected over said predetermined portion of the growth cycle of the crop.

3.     (Amended) The method of claim 1, further comprising the step of correlating said trend to at least one environmental parameter data acquired prior to or during said predetermined portion of the growth cycle of the crop to thereby determine the state of the field grown crop.

4.     (Amended) The method of claim 1, wherein said trend represents a positive change in a value of said at least one plant derived parameter, a negative change in said value of said at least one plant derived parameter, or no change in said value of said at least one plant derived parameter over said at least a portion of said predetermined portion of the growth cycle of the crop.

5.     (Amended) The method of claim 1, further comprising the step of graphically representing said data pertaining to said at least one plant derived parameter over said predetermined portion of the growth cycle of the crop.

6.    (Amended) The method of claim 1, wherein said data pertaining to said at least one plant derived parameter is selected from the group consisting of leaf temperature data, flower temperature data, fruit surface temperature data, stem flux relative rate data, stem diameter variation data, fruit growth rate data, leaf $CO_2$ exchange data and stem elongation rate data.

10.    (Amended) A system for assessing a state of a field grown crop comprising:

(a)    at least one sensor positioned on an unharvested plant of the crop, said at least one sensor being for collecting data pertaining to at least one plant derived parameter; and

(b)    a user client being in communication with said at least one sensor, said user client being for receiving and optionally analyzing said data collected from said at least one sensor over a predetermined portion of the growth cycle of the crop to thereby identify a trend in said data over at least a portion of said predetermined portion of the growth cycle of the crop, said trend being indicative of the state of the crop.

12.    (Amended) The system of claim 10, further comprising a display being for displaying said data collected from said at least one sensor over said predetermined portion of the growth cycle of the crop.

13.    (Amended) The system of claim 10, further comprising at least one device being in communication with said at least one user client, said device being for modifying said state of the field grown crop.

15.  (Amended) A method of assessing a state of a field grown crop comprising:

(a)  selecting a first unharvested plant, said first plant being representative of the crop;

(b)  collecting a first set of data pertaining to at least one plant derived parameter of said first unharvested plant over a predetermined portion of the growth cycle of the crop; and

(c)  analyzing said first set of data collected over said predetermined portion of the growth cycle of the crop to thereby identify a trend in said first set of data over at least a portion of said predetermined portion of the growth cycle of the crop, said trend being indicative of a state of said first unharvested plant and thus the state of the field grown crop.

16.  (Amended) The method of claim 15, further comprising:

(d)  selecting a second unharvested plant, said second unharvested plant being a reference plant to said first unharvested plant;

(e)  collecting a second set of data pertaining to at least one plant derived parameter of said second unharvested plant over said predetermined time period; and

(f)  comparing said first set of data and said second set of data to thereby verify that said first unharvested plant is representative of the field grown crop.

17.  (Amended) The method of claim 15, wherein said step of selecting said first unharvested plant is effected according to at least one selection criterion.

19.    (Amended) The method of claim 16, wherein said step of selecting said second unharvested plant is effected according to said at least one selection criterion.

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20.    (Amended) The method of claim 15, further comprising the step of correlating said trend to an additional trend derived from data pertaining to an additional plant derived parameter collected over said predetermined portion of the growth cycle of the crop.

21.    (Amended) The method of claim 15, further comprising the step of correlating said trend to at least one environmental parameter data acquired prior to or during said predetermined portion of the growth cycle of the crop, to thereby determine the state of said first unharvested plant and thus the state of said field grown crop.

22.    (Amended) The method of claim 15, wherein said trend represents a positive change in a value of said at least one plant derived parameter, a negative change in said value of said at least one plant derived parameter, or no change in said value of said at least one plant derived parameter over said at least a portion of said predetermined portion of the growth cycle of the crop.

23.    (Amended) The method of claim 15, wherein said data pertaining to said at least one plant derived parameter is selected from the group consisting of leaf temperature data, flower temperature data, fruit surface temperature data, stem flux relative rate data, stem diameter variation data, fruit growth rate data, leaf $CO_2$ exchange data and stem elongation rate data.

25.    (Amended) The method of claim 15, wherein said step of collecting said first set of data is effected by at least one sensor positioned on said first unharvested plant.

26.    (Amended) The method of claim 16, wherein step (e) is effected by at least one sensor positioned on said second unharvested plant.

28.    (Amended) A method of assessing the state of a field grown crop comprising:

(a)    co-cultivating a first plant with a crop of a second plant, said first plant being more sensitive to a change in at least one environmental factor or an infection by a pathogen than said second plant; and

(b)    monitoring at least one plant derived parameter associated with said first plant to thereby assess the state of the field grown crop.

**Please add new claims 29-55 as follows:**

29.    (New) A method of assessing the state of a greenhouse grown crop comprising:

(a)    collecting data pertaining to at least one plant derived parameter over a predetermined portion of the growth cycle of the crop, wherein said collecting is effected by at least one sensor positioned on a plant of the crop and whereas said crop is unharvested, and

(b)    analyzing said data collected over said predetermined portion of the growth cycle to thereby identify a trend in said data over at

least a portion of said growth cycle, said trend being indicative of the state of said the crop.

30.  (New) The method of claim 29, further comprising the step of correlating said trend to an additional trend derived from data pertaining to an additional plant derived parameter collected over said predetermined portion of the growth cycle of the crop.

31.  (New) The method of claim 29, further comprising the step of correlating said trend to at least one environmental parameter data acquired prior to or during said predetermined portion of the growth cycle of the crop to thereby determine said state of the greenhouse grown crop.

32.  (New) The method of claim 29, wherein said trend represents a positive change in a value of said at least one plant derived parameter, a negative change in said value of said at least one plant derived parameter, or no change in said value of said at least one plant derived parameter over said at least a portion of said predetermined portion of the growth cycle of the crop.

33.  (New) The method of claim 29, further comprising the step of graphically representing said data pertaining to said at least one plant derived parameter over said predetermined portion of the growth cycle of the crop.

34.  (New) The method of claim 29, wherein said data pertaining to said at least one plant derived parameter is selected from the group consisting of leaf temperature data, flower temperature data, fruit surface temperature data, stem flux relative rate data, stem diameter variation data, fruit growth rate data, leaf $CO_2$ exchange data and stem elongation rate data.

35.    (New) The method of claim 31, wherein said at least one environmental parameter data is selected from the group consisting of air humidity data, air temperature data, solar radiation data, a boundary diffusion layer resistance data, wind speed data, soil moisture data, and soil temperature data.

36.    (New) The method of claim 29, wherein said step of analyzing said data is effected by a processing unit.

37.    (New) A system for assessing a state of a greenhouse grown crop comprising:

(a)    at least one sensor positioned on an unharvested plant of the crop, said at least one sensor being for collecting data pertaining to at least one plant derived parameter; and

(b)    a user client being in communication with said at least one sensor, said user client being for receiving and optionally analyzing said data collected from said at least one sensor over a predetermined portion of the growth cycle of the crop to thereby identify a trend in said data over at least a portion of said predetermined portion of the growth cycle of the crop, said trend being indicative of the state of the crop.

38.    (New) The system of claim 37, wherein said communication between said user client and said at least one sensor is effected via a communication network.

39.     (New) The system of claim 37, further comprising a display being for displaying said data collected from said at least one sensor over said predetermined portion of the growth cycle of the crop.

40.     (New) The system of claim 37, further comprising at least one device being in communication with said at least one user client, said device being for modifying said state of the greenhouse grown crop.

41.     (New) The system of claim 40, wherein said device is selected from the group consisting of an irrigation device, a fertigation device and a climate controller.

42.     (New) A method of assessing a state of a greenhouse grown crop comprising:

(a)     selecting a first unharvested plant, said first plant being representative of the crop;

(b)     collecting a first set of data pertaining to at least one plant derived parameter of said first unharvested plant over a predetermined portion of the growth cycle of the crop; and

(c)     analyzing said first set of data collected over said predetermined portion of the growth cycle of the crop to thereby identify a trend in said first set of data over at least a portion of said predetermined portion of the growth cycle of the crop, said trend being indicative of a state of said first unharvested plant and thus the state of the greenhouse grown crop.

43. (New) The method of claim 42, further comprising:

(d) selecting a second unharvested plant, said second unharvested plant being a reference plant to said first unharvested plant;

(e) collecting a second set of data pertaining to at least one plant derived parameter of said second unharvested plant over said predetermined time period; and

(f) comparing said first set of data and said second set of data to thereby verify that said first unharvested plant is representative of the greenhouse grown crop.

44. (New) The method of claim 42, wherein said step of selecting said first unharvested plant is effected according to at least one selection criterion.

45. (New) The method of claim 43, wherein said at least one selection criterion is selected from the group consisting of height of a plant, number of leaves, number of fruits, number of flowers, fruit size, and number and length of shoots.

46. (New) The method of claim 42, wherein said step of selecting said second unharvested plant is effected according to said at least one selection criterion.

47. (New) The method of claim 42, further comprising the step of correlating said trend to an additional trend derived from data pertaining to an additional plant derived parameter collected over said predetermined portion of the growth cycle of the crop.

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48. (New) The method of claim 42, further comprising the step of correlating said trend to at least one environmental parameter data acquired prior to or during said predetermined portion of the growth cycle of the crop, to thereby determine the state of said first unharvested plant and thus the state of said greenhouse grown crop.

49. (New) The method of claim 42, wherein said trend represents a positive change in a value of said at least one plant derived parameter, a negative change in said value of said at least one plant derived parameter, or no change in said value of said at least one plant derived parameter over said at least a portion of said predetermined portion of the growth cycle of the crop.

50. (New) The method of claim 42, wherein said data pertaining to said at least one plant derived parameter is selected from the group consisting of leaf temperature data, flower temperature data, fruit surface temperature data, stem flux relative rate data, stem diameter variation data, fruit growth rate data, leaf CO2 exchange data and stem elongation rate data.

51. The method of claim 48, wherein said at least one environmental data is selected from the group consisting of air humidity data, air temperature data, solar radiation data, a boundary diffusion layer resistance data, wind speed data, soil moisture data, and a soil temperature data.

52. (New) The method of claim 42, wherein said step of collecting said first set of data is effected by at least one sensor positioned on said first unharvested plant.